

What is claimed is:

1. A distributed data processing system comprising a plurality of servers and a plurality of clients connected to the servers for performing a distributed data processing process on an object to be controlled,

each of said servers comprising:

a database memory for storing a database which is updated by the distributed data processing process performed by said clients;

a replication trigger generator for generating a replication trigger based on the updating of said database by the distributed data processing process performed by said clients;

an updating information transfer unit for transferring updating information of said database to another one of the servers based on said replication trigger; and

a database updating processor for updating said database based on the updating information transferred from the other server.

2. A distributed data processing system according to claim 1, wherein each of said clients comprises:

a connection information manager for managing connection information of a connection destination server to which the clients are connected; and

a connection information changer for changing the con-

nection information of the connection destination server;

the arrangement being such that if any of said servers suffers a fault, said connection information is changed by said connection information changer, and the distributed data processing process performed by the clients connected to the server which suffers the fault is continued under the management of another normal one of the servers to which said connection information is changed.

3. A distributed data processing system according to claim 1, further comprising:

a backup processor for performing backup process at predetermined time intervals while said database is in operation;

a backup data memory for storing backup data produced by the backup process performed while said database is in operation;

an archive data generator for generating archive data based on the updating information of the database which is generated after the backup process performed while said database is in operation has started; and

an archive data memory for storing the archive data;

the arrangement being such that said database is recovered based on said backup data and said archive data.

4. A distributed data processing system according to claim 2, further comprising:

a backup processor for performing backup process at predetermined time intervals while said database is in operation;

5 a backup data memory for storing backup data produced by the backup process performed while said database is in operation;

10 an archive data generator for generating archive data based on the updating information of the database which is generated after the backup process performed while said database is in operation has started; and

an archive data memory for storing the archive data;

the arrangement being such that said database is recovered based on said backup data and said archive data.

15 5. A distributed data processing system according to claim 1, wherein said servers comprise:

a server for managing one of the clients which is of a production management system which is of the object to be controlled; and

20 a server for managing one of the clients which is of a process control system which is of the object to be controlled.

25 6. A distributed data processing system according to claim 5, wherein each of said servers has independent settings of distributed data processing so that said database can be independently processed in inserting, updating, or

deleting data.

5 7. A method of processing data in a distributed data processing system having a plurality of servers and a plurality of clients connected to the servers for performing a distributed data processing process on an object to be controlled, comprising the steps of:

updating a database according to the distributed data processing process performed by said clients;

10 generating a replication trigger based on the updating of said database by the distributed data processing process performed by said clients;

transferring updating information of said database to another one of the servers based on said replication trigger; and  
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updating said database based on the updating information transferred from the other server.

20 8. A method according to claim 7, further comprising the steps of:

if any of said servers suffers a fault, changing a connection destination of the clients connected to the server which suffers the fault to another normal one of the servers; and

25 continuing the distributed data processing process performed by the clients connected to the server under the management of the other normal server.

9. A method according to claim 8, further comprising the step of activating again said server suffering the fault to resume normal operation after completion of a restoring process, said step of activating again said server comprising the steps of:

shutting off all the clients connected to said server;  
setting again information of the connection destination of the clients;

connecting the clients to said server according to the set information; and

resuming the distributed data processing process in a normal connection state.

10. A method according to claim 7, further comprising the steps of:

performing a backup process at predetermined time intervals while said database is in operation and saving backup data produced by the backup process performed;

generating and saving archive data based on the updating information of the database which is generated after the backup process performed while said database is in operation has started; and

if one of said servers suffers a fault, copying said backup data of another normal one of the servers, and recovering the database from said archive data of the other normal server.

11. A method according to claim 10, further comprising the step of:

5 copying said backup data while the clients are being continuously operated by said other normal server.

12. A method according to claim 8, further comprising the steps of:

10 performing a backup process at predetermined time intervals while said database is in operation and saving backup data produced by the backup process performed;

15 generating and saving archive data based on the updating information of the database which is generated after the backup process performed while said database is in operation has started; and

if one of said servers suffers a fault, copying said backup data of another normal one of the servers, and recovering the database from said archive data of the other normal server.